AMENDMENT

Amendments to the Claims

1. (currently amended) A method of measuring contaminants in water comprising:

   a. introducing into an aquatic organism a DNA construct comprising a sequence encoding at least one regulatory response element operatively linked to a DNA molecule comprising at least one reporter gene such that the at least one regulatory response element controls the expression of the at least one reporter gene and thereby forming an operative transgenic organism;

   b. exposing the transgenic organism to a water sample to be tested for a time sufficient to allow contaminants to become bioconcentrated within the transgenic organism;

   c. exposing the transgenic organism to conditions permitting expression of the at least one reporter gene; and

   d. detecting the expression of the at least one reporter gene; and

   e. correlating the detected expression of the transgenic organism to a reference standard comprising an aquatic source containing a known contaminant concentration ~~known standards~~ and thereby determining the quantity of contaminants in the water sample.

2. (currently amended) A method of measuring contaminants in water comprising:

   a. introducing into an organism a DNA construct comprising a sequence of two or more regulatory response elements operatively linked to a DNA molecule comprising at least one reporter gene such that at least one of the regulatory elements controls expression of the reporter gene and thereby forming an operative transgenic organism;

   b. exposing the transgenic organism to a water sample to be tested for a time sufficient to allow contaminants to become bioconcentrated within the transgenic organism;

c. exposing the transgenic organism to conditions permitting expression of the reporter gene; and

d. detecting the expression of the reporter gene; and

e. correlating the detected expression of the transgenic organism to a reference standard comprising an aquatic source containing a known contaminant concentration ~~known standards~~ and thereby determining the quantity of contaminants in the water sample.

3. (previously amended) The method according to claim 1 wherein the regulatory response element is a promoter.

4. (previously amended) The method according to claim 1 wherein the regulatory response element is a promoter selected from the group consisting of metal response elements (MRE), aromatic hydrocarbon response elements (AHRE), estrogen response elements (ERE), electrophile response elements (EPRE), and retinoic acid response elements (RARE, RXRE).

5. (canceled)

6. (currently amended) The method according to claim 4 ~~5~~ wherein the transgenic organism is exposed to the water sample for at least one minute.

7. (currently amended) The method according to claim 4 ~~5~~ wherein the transgenic organism is exposed to the water sample for at least 2 minutes.

8. (currently amended) The method according to claim 4 ~~5~~ wherein the transgenic organism is exposed to the water sample for at least one hour.

9. (currently amended) The method according to claim 4 ~~5~~ wherein the transgenic organism is exposed to the water sample for at least 12 hours.

10. (currently amended) The method according to claim 4 ~~5~~ wherein the transgenic organism is exposed to the water sample for at least 24 hours.

11. (previously amended) The method according to claim 2 wherein the regulatory response element is a promoter selected from the group consisting of metal response elements (MRE),

aromatic hydrocarbon response elements (AHRE), estrogen response elements (ERE), electrophile response elements (EPRE), and retinoic acid response elements (RARE, RXRE).

12. (previously amended) The method according to claim 11 wherein the reporter gene encodes a bioluminescent molecule.

13. (previously amended) The method according to claim 4 wherein the DNA construct is made up of multiple copies of the same response element.

14. (previously amended) The method according to claim 4 wherein the DNA construct contains more than one type of response element.

15. (previously amended) The method according to claim 4 wherein the DNA construct contains more than two types of response element.

16. (previously amended) The method according to claim 4 wherein the DNA construct contains two or more copies each of more than one type of response element.

17. (previously amended) The method according to claim 4 wherein the DNA construct contains additional promoters or enhancers.

18. (canceled)

19. (currently amended) The method according to claim ~~4~~18 wherein the reporter gene encodes a bioluminescent molecule.

20. (previously amended) The method according to claim 19 wherein the reporter gene is a luciferase or GFP gene.

21. (previously amended) The method according to claim 19 wherein the reporter gene is a luciferase gene.

22. (previously amended) The method according to claim 19 wherein the reporter gene is a eucaryotic luciferase gene.

23. (previously amended) The method according to claim 19 wherein the reporter gene is a GFP reporter gene.

24. (original) The method according to claim 22 wherein the conditions permitting expression of the reporter gene include a sufficient amount of enzyme substrate.

25. (previously amended) The method according to claim 24 wherein the substrate is luciferin.

26. (previously amended) The method according to claim 25 wherein the detection of the expression of the reporter gene is by using a luminometer.

27. (currently amended) The method according to claim 4 ~~18~~ wherein the transgenic organism is exposed to a water sample to be tested continually wherein the organism is removed from the water sample repeatedly at selected intervals exposed to conditions permitting expression of the reporter gene and detected for reporter gene expression wherein such repeated exposures and detecting of expression is effective to track a time course of contaminant levels.

28. (original) The method according to claim 22 wherein the contaminant to be detected is one or more contaminants selected from the group consisting of polyaromatic hydrocarbons, electrophilic oxidants heavy metals, endocrines, and retinoids.

29. (original) The method according to claim 22 wherein the contaminant to be detected is one or more contaminants selected from the group consisting of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, dioxin, polychlorinated biphenyls, quinones, mercury, copper, nickel, cadmium, zinc, estrogens, retinoic acid and 9-*cis*-retinoic acid.

30. (original) The method according to claim 22 wherein the contaminant to be detected is mercury.

31. (original) The method according to claim 28 wherein both a polyaromatic hydrocarbon and an electrophilic oxidant heavy metal are detected contaminants.

32. (previously presented) The method according to claim 22 wherein the contaminants become bioconcentrated at least 1,000-fold, relative to the water in the tissues of the organism.

33. (original) The method according to claim 22 wherein the fish are removed from the test water and placed immediately in a luminometer cuvette and incubated with luciferin.

34. (currently amended) The method according to claim 4 ~~18~~ wherein the reporter gene sequence has a degree of homology of at least about 85% to the reporter gene sequence of the native source of the reporter gene.

35. (previously amended) The method according to claim 22 wherein the reporter gene has at least 85% homology to a luciferase reporter gene in the firefly Photinus pyralis.

36. (previously amended) The method according to claim 23 wherein the reporter gene sequence has at least 85 % homology to a reporter gene sequence of a species of Aequorea.

37. (previously amended) The method according to claim 22 wherein the luciferase reporter gene is derived from a species selected from the group consisting of Aequorea victoria and Aequorea forskalea.